IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No.:	10/525,174	Conf No.:	7740
Inventor:	Bert L. A. Verdonck		
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Docket No.:	NL020766US (PHB-10-6638)		
Customer No.:	24737		

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

APPEAL BRIEF

Dear Sir:

Attached herewith is an Appeal Brief pursuant to 35 U.S.C. §134 and 37 C.F.R. §41.37 for the above-identified patent application in support of a Notice of Appeal filed at the US Patent and Trademark Office on March 18, 2009.

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I. REAL PARTY IN INTEREST

The real party in interest in the above-entitled application is Koninklijke Philips Electronics N.V., Eindhoven, NL.

II. RELATED APPEALS AND INTERFERENCES

The undersigned attorney/agent, the appellants, and the assignee are not aware of any related appeals or interferences that would directly affect, or be directly affected by, or have a bearing on the Board's decision in this pending appeal.

III. STATUS OF THE CLAIMS

Claims 1-3, 9 and 19-22 are rejected, claims 12-18 are allowed, and claims 4-8 are objected to. Claims 1-3, 9 and 19-22 and claims 4-8 are on appeal. Claims 10 and 11 have been canceled.

IV. STATUS OF AMENDMENTS

No after final amendments have been submitted.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

Independent **claim 1** is directed to a method of producing an object data set describing a straightened reformat from an original object data set containing an elongated subject, from which an initial cross sectional slice is created transverse to the elongated subject and at least one further cross sectional slice is created transverse to the elongated subject, the method including: determining a reference direction in each cross sectional slice; and creating the object data set by concatenating the cross sectional slices, each cross sectional slice being orientated so that the reference directions in the cross sectional slices are aligned (*See, inter alia,* page 8, line 24 to page 9, line 12; and Figs. 2-6).

Claim 2 depends from claim 1, and recites determining the reference direction in each cross sectional slice comprises: determining an initial reference direction in the initial cross sectional slice, and deriving a reference direction in the at least one further cross sectional slice from the initial reference direction by propagation. (*See, inter alia,* page 5, lines 3-8; page 9, lines 13-28; Fig. 7).

Claim 3 depends from claim 2, and recites that the determined initial reference direction is propagated directly into each of the at least one further slice. (*See, inter alia,* page 5, lines 3-14; page 9, lines 13-28; Fig. 7)

VI. <u>GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL</u>

Whether claims 1-3, 9 and 19-22 are unpatentable under 35 U.S.C. 103(a) over Johnson et al. (US 6,928,314) in view of Mistretta (US 2003/0060698).

VII. <u>ARGUMENTS</u>

<u>A. The Rejection of Claims 1-3, 9 and 19-22 under 35 U.S.C. 103(a)</u>

Claims 1-3, 9 and 19-22 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson et al. in view of Mistretta. This rejection should be reversed because the combination of Johnson et al. and Mistretta does not teach or suggest all the limitations of the subject claims and, therefore, fails to establish a *prima facie* case of obviousness with respect to the subject claims.

> The rationale to support a conclusion that the claim would have been obvious is that all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed. *KSR International Co. v. Teleflex Inc.*, 550 U.S. ___ (2007). MPEP §2143.

Independent **claim 1** is directed to a method that includes: **determining a <u>reference direction</u> in <u>each</u> cross sectional <u>slice</u>**; and **creating the object data** set by concatenating the

cross sectional slices, **each cross sectional slice being orientated so that the reference directions in the cross sectional slices are aligned**. The combination of Johnson et al. and Mistretta does not teach or suggest all of these limitations. The Office asserts in the prior Office Action that Johnson et al. discloses at column 14, lines 26-32 and 45-56, determining a reference direction in each cross sectional slice and creating an object data set with cross sectional slice that are orientated so that the reference directions in the cross sectional slices are aligned. The Office now also further asserts in the Advisory Action that Johnson et al. discloses these claim aspects at column 13, lines 35-47 and Fig. 4. Appellant respectfully disagrees.

More particularly, Johnson et al. discloses at column 14, lines 14-25, changing the **view direction** while navigating through **volume data** so that a selected feature is at the center of the view. Johnson et al. discloses at column 14, lines 26-32, that the view direction for the current view of the volume data is represented via a dot with a line segment extending from the dot in the direction of the center of the view and that the user can control the view direction of the volume data by moving the indicator in a scout view. Johnson et al. also discloses at column 14, lines 45-56, several interactive features or tools for processing the volume data, such as windowing and leveling the data, zooming and re-orienting the camera view, making measurements, selectively inspecting portions of the volume data, and selectively selecting slices to display as straightened images. Johnson et al. further discloses positioning along the midline can also be controlled by selecting points in the reformatted 2D images themselves (column 13, lines 35-47) and that two of the reformatted 2D cross section images are aligned with the colon midline (Fig. 4).

However, none of the cited sections of Johnson et al. (column 14, lines 26-32, column 14, lines 45-56, and lines 35-47) nor Fig. 4 teaches or suggests determining a reference direction in each cross sectional slice or creating an object data set with cross sectional slices, each cross sectional slice being orientated so that the reference directions in the cross sectional slices are aligned as required by claim 1. Accordingly, this rejection should be reversed.

Claim 2 depends from claim 1, and includes determining the reference direction in each cross sectional slice includes determining an initial reference direction in the initial cross sectional slice, and deriving a reference direction in the at least one further cross sectional slice from the initial reference direction by propagation. The Office asserts that these claim aspects are taught in claim 1 and column 22, lines 5-31, of Johnson et al. Appellant respectfully disagrees. Claim 1 of Johnson et al. relates to a dual display mode in which images of a structure at two different positions are simultaneously displayed for a series of viewpoints along a structure, and column 22, lines 1-31 of Johnson et al. discloses that the two positions are supine and prone and a technique for switching between dual and single display mode. Both claim 1 and the cited section of Johnson et al. are silent regarding the subject claim aspects. Accordingly, this rejection should be reversed.

Claim 3 depends from claim 2, and includes that the determined initial reference direction is propagated directly into each of the at least one further slice. The Office asserts that Johnson et al. discloses these claim aspects in column 14, lines 26-32 and 45-56. As discussed *supra*, these sections of Johnson et al. relate to changing the view direction of volume data and manipulating the volume data via windowing, leveling, zooming, etc. These sections of Johnson et al. do not contemplate the subject claim aspects. Accordingly, this rejection should be reversed.

Claims 9 and 19-22 directly or indirectly depend from claim 1 and are allowable at least by virtue of this dependency.

CONCLUSION

In view of the foregoing, it is submitted that the claims distinguish patentably and non-obviously over the prior art of record, and reversal of the rejection of the claims herein is respectfully requested.

Respectfully submitted,

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VIII. CLAIM APPENDIX

1. A method of producing an object data set describing a straightened reformat from an original object data set containing an elongated subject, from which an initial cross sectional slice is created transverse to the elongated subject and at least one further cross sectional slice is created transverse to the elongated subject, the method comprising:

determining a reference direction in each cross sectional slice; and

creating the object data set by concatenating the cross sectional slices, each cross sectional slice being orientated so that the reference directions in the cross sectional slices are aligned.

2. The method as in claim 1, wherein determining the reference direction in each cross sectional slice comprises:

determining an initial reference direction in the initial cross sectional slice, and

deriving a reference direction in the at least one further cross sectional slice from the initial reference direction by propagation.

3. The method as in claim 2, wherein the determined initial reference direction is propagated directly into each of the at least one further slice.

4. The method as in claim 2, wherein the initial and the at least one further cross sectional slices form a consecution of successive cross sectional slices and the reference direction in each of the at least one further cross sectional slice is derived from the reference direction in a preceding slice by propagation.

5. The method as in claim 1, wherein determining the reference direction in each cross sectional slice comprises:

determining a first reference direction in the initial cross sectional slice,

independently determining a final reference direction in a final cross sectional slice, so that there is at least one intervening cross sectional slice between the initial and the final cross sectional slices,

deriving the reference direction in each of the at least one intervening cross sectional slice by optimizing a change of reference direction throughout the at least one intervening cross sectional slice while using the reference directions in the initial and final cross sectional slices as boundary conditions.

6. The method as in claim 5, wherein the change of reference direction is optimized by minimizing a change in relative orientation between the reference directions of consecutive cross sectional slices from the first reference direction in the initial cross sectional slice to the final reference direction in the final cross sectional slice.

7. The method as in claim 5, wherein an additional cross sectional slice is chosen from the at least one intervening cross sectional slice between the initial and the final cross sectional slices, an additional reference direction is determined in the additional cross sectional slice, the reference directions in the intervening cross sectional slices between the initial and the additional cross sectional slice and between the additional and the final cross sectional slices are derived by optimizing the change of reference direction throughout the cross sectional slices while using the first, additional and final reference directions as boundary conditions.

8. The method as in claim 1, further comprising:

aligning the cross sectional slices within the object data set describing the straightened reformat in such a way that their respective reference directions are at the same angular orientation within the object data set.

9. The method as in claim 1, further comprising:
displaying object data set describing the straightened reformat.

10-11. (Canceled)

12. A method of creating an object data set describing a straightened reformat from an original object data set containing an elongated subject, the method comprising:

creating a plurality of cross sectional slices transverse to the elongated subject;

determining a plurality of reference directions corresponding to the plurality of cross sectional slices, including determining an initial reference direction associated with an initial cross sectional slice of the plurality of cross sectional slices and deriving reference directions corresponding to remaining cross sectional slices of the plurality of cross sectional slices from the initial reference direction by propagation;

concatenating the plurality of cross sectional slices; and

aligning the plurality of reference directions corresponding to the plurality of cross sectional slices,

wherein the plurality of cross sectional slices form a consecution of successive cross sectional slices, and the reference directions corresponding to the remaining cross sectional slices are each derived from the reference direction corresponding to a preceding cross sectional slice by propagation.

13. A method of creating an object data set describing a straightened reformat from an original object data set containing an elongated subject, the method comprising:

creating a plurality of cross sectional slices transverse to the elongated subject;

determining a plurality of reference directions corresponding to the plurality of cross sectional slices;

concatenating the plurality of cross sectional slices; and

aligning the plurality of reference directions corresponding to the plurality of cross sectional slices,

wherein determining the plurality of reference directions comprises:

determining a first reference direction corresponding to a first cross sectional slice of the plurality of cross sectional slices;

independently determining a final reference direction corresponding to a final cross sectional slice of the plurality of cross sectional slices, at least one intervening cross sectional slice being between the first cross sectional slice and the final cross sectional slice; and

deriving a plurality of intervening reference directions corresponding to a plurality of intervening cross sectional slices by optimizing changes associated with the intervening reference directions, using the first reference direction and the final reference direction as boundary conditions.

14. The method of claim 13, wherein optimizing the changes associated with the intervening reference directions comprises minimizing a change in relative orientation between the reference directions of consecutive cross sectional slices from the first reference direction corresponding to the first cross sectional slice to the final reference direction corresponding to the final cross sectional slice.

15. The method of claim 13, further comprising:

selecting an additional cross sectional slice from the plurality of intervening cross sectional slices and determining an additional reference direction corresponding to the additional cross sectional slice,

wherein the intervening reference directions corresponding to the remaining intervening cross sectional slices between the first cross sectional slice and the additional cross sectional slice and between the additional cross sectional slice and the final cross sectional slice are derived by optimizing changes associated with the intervening reference directions, using the first reference direction, the additional reference direction and the final reference direction as boundary conditions.

16. A method of creating an object data set describing a straightened reformat from an original object data set containing an elongated subject, the method comprising:

creating an initial cross sectional slice and at least one further cross sectional slice transverse to the elongated subject;

determining a reference direction in each cross sectional slice;

concatenating the cross sectional slices; and

aligning the cross sectional slices within the object data set describing the straightened reformat in such a way that the respective reference directions are at the same angular orientation within the object data set.

17. The method of claim 16, wherein determining the reference direction in each cross sectional slice comprises:

determining an initial reference direction in the initial cross sectional slice, and deriving a reference direction in the at least one further cross sectional slice from the initial reference direction by propagation.

18. The method as in claim 17, wherein the determined initial reference direction is propagated directly into each of the at least one further cross sectional slice.

19. The method as in claim 1, wherein creating the object data set includes stacking the cross sectional slices one on top of another.

20. The method of claim 1, wherein each of the cross sectional slices is approximately centered around the elongated object.

21. The method of claim 1, wherein the reference directions for at least two of the cross sectional slices are angularly offset from each other.

22. The method as in claim 21, wherein creating the object data set includes orienting the at least two cross sectional slices to align the reference directions of the at least two cross sectional slices.

IX. EVIDENCE APPENDIX

None.

X. RELATED PROCEEDINGS APPENDIX

None known to undersigned attorney/agent.